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METHODS, COMPOSITIONS AND DEVICES
FOR GROWING HEMATOPOIETICS CELLS

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ABSTRACT OF THE DISCLOSURE

Methods, compositions and devices are provided
for the growth of hematopoietic cells in culture.
Bioreactors are provided in which diverse cell types are
10 simultaneously cultured in the presence of appropriate
levels of nutrients and growth factors substantially
continuously maintained in the bioreactor while removing
undesirable metabolic products. This simultaneous
culture of multiple cell types is required for the
15 successful reconstruction of hematopoietic tissue ex
vivo. At least one growth factor is provided through
excretion by transfected stromal cells, particularly
heterologous cells. Means are provided for maintaining
the stromal cells and hematopoietic cells separately, to
20 allow for early removal of the hematopoietic cells.